

Name: _____

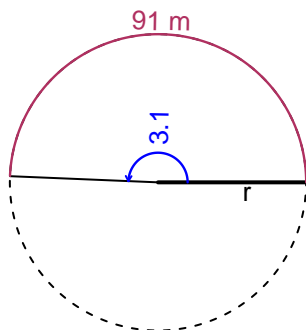
Date: _____

Trig Final (TEST v655)

- You can use a calculator (like [Desmos](#))
- You should have a unit-circle with special angles and coordinates marked.

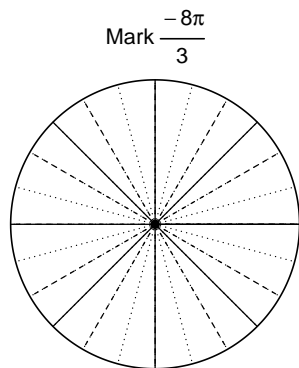
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 91 meters. The angle measure is 3.1 radians. How long is the radius in meters?

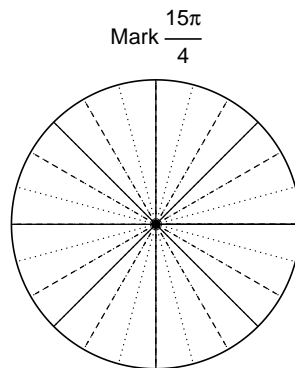


Question 2

Consider angles $-\frac{8\pi}{3}$ and $\frac{15\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(-\frac{8\pi}{3}\right)$ and $\cos\left(\frac{15\pi}{4}\right)$ by using a unit circle (provided separately).



Find $\sin(-8\pi/3)$



Find $\cos(15\pi/4)$

Question 3

If $\cos(\theta) = \frac{11}{61}$, and θ is in quadrant IV, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 2.58 meters, a frequency of 7.78 Hz, and a midline at $y = -5.19$ meters. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).